

CLAIMS

1. A system for detecting compression of audio signals transmitted by way of a communications channel, the system comprising an encoder imposing upon said audio signals, in a predetermined relationship, first coding signals robust against audio compression and second coding signals vulnerable to contamination by noise when subjected to audio compression, and a detector operative upon signals received by way of said channel; said detector being conditioned to reject signals contaminated by said noise, and a comparator comparing the relationship between first and second coding signals as received in order to detect variation in said predetermined relationship, thereby to discern whether unauthorized compression has been applied to audio signals received by way of said communications channel.
2. A system according to claim 1 wherein said first and second coding signals are similar in nature, but are inserted in different areas of the frequency spectrum of the audio signals and/or at differing levels of modulation.
3. A system according to claim 1 wherein the said coding signals each comprise a phase modulated carrier frequency.
4. A system according to claim 1 wherein said first and second coding signals comprise similar code sequence signals, the second coding signals being inserted at a lower level and/or in a notch disposed within a frequency zone of the audio signals more sensitive to compression than are the first coding signals.
5. A system according to claim 1 wherein the first and second coding signals are inserted in one-to-one relationship into the audio signals.
6. A system according to claim 1 wherein the first and second coding signals are simultaneously inserted into respective notches in the frequency spectrum of the audio signals.

7. A system according to claim 1 wherein the first and second coding signals are inserted sequentially, in respective bursts, in the same notch.
8. A system according to claim 1 wherein the detection of the second coding signals from the audio signals as transmitted through the communications channel includes elements sensitive to noise of the kind introduced by audio signal compression.
9. A system according to claim 1 wherein the first coding signals contain usage rules prescribed by the owner of the signal content.
10. A system according to claim 1 wherein the audio signals are considered to have been subjected to compression if the predetermined relationship between the first (robust) and second (fragile) codes has been disturbed.
11. A system according to claim 10 wherein the number of robust codes recovered is used as an indication of the number of fragile codes that were inserted into the audio signal.
12. A system for detecting a first type of signal processing having been applied to audio signals transmitted by way of a communications channel, the system comprising an encoder imposing upon said audio signals, in a predetermined relationship, first coding signals robust against said first type of signal processing, and second coding signals vulnerable to contamination by noise when subjected to said first type of signal processing, and a detector operative upon signals received by way of said channel; said detector being conditioned to reject signals contaminated by said noise, and a comparator comparing the relationship between first and second coding signals as received in order to detect variation in said predetermined relationship, thereby to discern whether unauthorized signal processing of the first type has been applied to audio signals received by way of said communications channel, characterized in that said second coding signals are robust against other types of signal processing.
13. A system as claimed in claim 12 in which said second coding signals are vulnerable to one member of the group of signal processing procedures consisting of: low bit rate, lossy compression, mix-down, downsampling, equalization, echo addition, linear speed change, amplitude compression, time scale modification, band-pass filtering, and noise addition; and in which said second coding signals are more robust to the other members of said group of signal processing procedures.

14. A system as claimed in claim 13 in which further types of coding signal are inserted into the audio signals, each type being vulnerable to a different member of said group of signal processing procedures.

15. A system for detecting a first type of signal processing having been applied to audio signals transmitted by way of a communications channel, the system comprising an encoder imposing upon said audio signals coding signals vulnerable to contamination by noise when subjected to said first type of signal processing, the coding signals including information as to the number of coding signals originally applied to the audio signal, and a detector operative upon signals received by way of said channel; said detector being conditioned to reject signals contaminated by said noise, and a comparator comparing the number of uncontaminated coding signals received with the number originally applied, thereby to discern whether unauthorized signal processing of the first type has been applied to audio signals received by way of said communications channel, characterized in that said coding signals are robust against other types of signal processing.